Panhandle AgriPartners

Program helps farmers manage farms, water more efficiently

After 33 years in agribusiness, Dennis Beilue found he wasn't ready to hang up his agricultural hat when he retired in 2000. Three years later he was back in the business as a Texas Cooperative Extension farm demonstration assistant with the Panhandle AgriPartners Program.

AgriPartners is a collaborative program between Extension, the Texas Agricultural Experiment Station, farmers, farm commodity groups, industry, water districts and other entities. The program, with its farm demonstration assistants, provides technical support to Texas A&M researchers and Extension specialists and agents while giving Panhandle farmers up-to-date information on their crops' growth, water use, and pest and disease control to help farmers make good farming decisions.

(Top) Dennis Beilue, a Panhandle AgriPartner farm demonstration assistant, checks on cotton grown by subsurface drip irrigation (left hand) and center point irrigation (right hand). The demonstrations are in a field near Etter in Moore County.

(Center) Dennis Beilue reads the water meter for Doug May's subsurface drip irrigation system. Drip irrigation systems, although more costly to install, are proving to be efficient irrigation systems.

(Bottom) Cotton, which takes less water than other crops, is becoming more popular as a profitable crop in the Texas Panhandle. The AgriPartners Program helps farmers make management decisions such as replacing other crops with cotton.

The AgriPartners demonstrations are tied to the Texas High Plains Evapotranspiration program, which provides daily information on irrigation schedules. Center pivot irrigation systems have become more efficient using the TXHPET.

Beilue, from Dumas, became one of five assistants who work part-time under the supervision of Texas Cooperative Extension agents in five Panhandle offices. The assistants visit participating farms twice a week to monitor the farms' water use, crop development and growth, and pest status. They calculate water use by measuring the moisture in the soil at 1, 2 and 3 feet depths, and use rain gauges to determine rainfall and water meters for irrigation water use.

"At the end of each growing season, we can account for all water use," said O. R. (Reggie) Jones, technical coordinator of the program.

The assistants also help with demonstrations of new or improved farming and irrigation practices, crop genetics and technologies on participating farms.

Doug May of Dumas is one farmer who has new irrigation practices being tested on his farm. In its first year as a demonstration farm, half of May's cotton crop is being irrigated by the traditional pivot sprinkler system while the other half is irrigated by a new subsurface drip irrigation method.

Dr. Bob Robinson, Extension regional agriculture program director and one of the founders of AgriPartners, said Extension and research programs had never had the capability to monitor the crops so closely and integrate applied research so quickly before the start of this program.

"Our agents are so busy," Robinson said. "They couldn't visit the same farm at the same time twice a week for the entire growing season."

Since its inception in 1998, the program members have conducted 498 demonstrations on about 54,835 acres with more than 389 farmers.

In 2005, the Panhandle AgriPartners program conducted 40 cropping and irrigation demonstrations with cotton, wheat, corn, sorghum, silage, soybean and peanuts, involving more than 4,000 acres and 32 farmers in 14 counties.

Likewise, in 2004 the program conducted 44 on-farm crop and irrigation demonstrations involving seven crops, 4,716 acres of cropland and 29 cooperating producers in 17 Panhandle counties.

All demonstrations are tied to the Texas High Plains Evapotranspiration (TXHPET) research program, aimed at providing daily information on the water needs of the crops so farmers can adjust their irrigation schedules for efficient irrigation water use. The TXHPET network is a series of weather stations that measure daily evaporation and rainfall and it predicts the transpiration of a well-watered plant throughout its typical growing season.

Information gathered by the assistants is put in databases for developing and calibrating crop, pest and economic models used in PET and other production agriculture modeling and prediction efforts.

With this increased monitoring and more rapid application of research and technology, Panhandle farmers have seen increases in the efficiency of irrigation, improved yields of their crops and better economics of their production systems.

"Water is precious," Robinson said. "By using our monitoring system and the PET, farmers are able to strategically apply the correct amount of water to maximize yields, but also conserve water."

Farmer and AgriPartner demonstration assistant Dan Krienke agreed. Before he started participating in the program in 1998, Krienke said he was "shooting from the hip" to determine how much to irrigate his wheat crops.

"Now I have a plan," he said. "I've learned that I can water at 70 percent of PET and get 70 bushels of wheat per acre."

The program has also helped Krienke time the watering of his crops.

"I can start and stop watering a little earlier now because I have confidence that the moisture sensors will tell me the amount of water in the soil," Krienke said. "I can definitely say I've saved water. The groundwater district says we can use no more than 24 inches per acre each growing season and I use about 13 inches by better managing my water use."

Leon New, Extension irrigation specialist at the Texas Agricultural Research and Extension Center in Amarillo, said production of crops per inch of irrigation has increased over time through better management of irrigation water and adopting better irrigation techniques.

New, who compiles all data gathered by the AgriPartners program each year, said over the years the numbers have shown that center pivot irrigation is more efficient than furrow irrigation. In 2004, for corn production, center pivot used 7.5 inches per acre less water than row water and produced 349 pounds of corn per acre inch of rainfall, irrigation and soil water compared to 252 pounds using row water.

He said he has documented similar results for cotton with subsurface drip irrigation proving to be another efficient irrigation system.

"For 2004, a cooperating grower produced 148 pounds of cotton per inch of irrigation using subsurface systems and 53 pounds per inch of rain, irrigation and soil water. Another grower using center pivot irrigation produced 115 pounds of cotton per inch of irrigation and 56 pounds per inch of total water," New said, interpreting his research data collected each year. Average cotton production for 71 field tests is 86 pounds from each inch of irrigation and 41 pounds per inch of rainfall, soil water and irrigation measured.

AgriPartners Demonstration Assistant Dan Krienke and Extension agent for agriculture Scott Strawn examine maturing cotton on an irrigated demonstration farm near Perryton in the upper Texas Panhandle.

"The AgriPartner program uses leader growers who show the way. Some growers are doing a better job of managing their irrigation water," New said. "And it must continue due to the price of irrigation, fuel, and declining available water. Growers here are aware they must continue to produce more with less to survive."

Information gathered from demonstration farms is shared with other farmers in the area. New said farmers not participating directly in the program are more likely to accept the irrigation and crop management information collected from their neighbors than from other research results.

Seito Mellano, a Dalhart farmer, said this local information is the best part of the program because it helps farmers make better management decisions that result in greater profitability.

"What works in Corpus Christi doesn't work in Dalhart," Mellano said.

Dumas farmer Keith Watson agreed. "A lot of very important information comes out of that (the water monitoring)," he said.

Watson is working with AgriPartners to determine which varieties of cotton work best in the Panhandle because the area is "new cotton country." AgriPartners provides the computer programs, equipment, technology and knowledge to supply comprehensive research to the farmers, he said.

The PET program is especially important to new cotton farmers, Watson said, because the tendency might be to overwater since cotton takes about one-third less water than other crops like corn.

The AgriPartners information is also valuable for state water planning, New said. When Region A's water planning group wrote the state-mandated water plan, the AgriPartner data provided accurate irrigation demand data, he said. The program has soil water information for each grower demonstration that no other area in the state has collected as well as irrigation and rainfall measurements.

"No other state water planning region has this quality of data to use in their planning process," he said.

Texas Cooperative Extension and the Texas Agricultural Experiment Station have funded the AgriPartners program along with major agricultural industry partners and Texas farm commodity groups. Major commodity groups include the Texas Wheat Producers Board, Texas Corn Producers Board, Texas Grain Sorghum Board, Texas Soybean Board, Texas State Support Committee of Cotton, Inc. and the Texas Peanut Producers Board.

In the big picture, Robinson said, the farm-based projects serve as building blocks to advance The Texas A&M University System's initiatives in water conservation and improved production agriculture.

"AgriPartners is working to build partnerships that strongly support and benefit Panhandle agriculture," Robinson said. "We have just scratched the surface with this unique and productive partnership program, and so much remains to be done."

Beilue is glad he is involved in AgriPartners.

"It allows me to help, in some small way, the local farmers cope with a difficult, changing agriculture environment," Beilue said. "The AgriPartners program has been a win-win for me, the area's farmers and Texas Cooperative Extension."